

Title (en)
METHOD FOR PRODUCING GROUP-III NITRIDE CRYSTAL, GROUP-III NITRIDE CRYSTAL, SEMICONDUCTOR DEVICE, AND DEVICE FOR PRODUCING GROUP-III NITRIDE CRYSTAL

Title (de)
VERFAHREN ZUR HERSTELLUNG EINES GRUPPE-III-NITRIDKRISTALLS, GRUPPE-III-NITRIDKRISTALL, HALBLEITERBAUELEMENT UND VORRICHTUNG ZUR HERSTELLUNG DES GRUPPE-III-NITRID-KRISTALLS

Title (fr)
PROCÉDÉ DE PRODUCTION D'UN CRISTAL DE NITRURE DU GROUPE III, CRISTAL DE NITRURE DU GROUPE III, DISPOSITIF SEMI-CONDUCTEUR, ET DISPOSITIF DE PRODUCTION DE CRISTAL DE NITRURE DU GROUPE III

Publication
EP 3103899 A1 20161214 (EN)

Application
EP 15759207 A 20150226

Priority
• JP 2014041080 A 20140303
• JP 2015055716 W 20150226

Abstract (en)
A large Group III nitride crystal of high quality with few defects such as a distortion, a dislocation, and warping is produced by vapor phase epitaxy. A method for producing a Group III nitride crystal includes: a first Group III nitride crystal production process of producing a first Group III nitride crystal 1003 by liquid phase epitaxy; and a second Group III nitride crystal production process of producing a second Group III nitride crystal 1004 on the first crystal 1003 by vapor phase epitaxy. In the first Group III nitride crystal production process, the surfaces of seed crystals 1003a (preliminarily provided Group III nitride) are brought into contact with an alkali metal melt, a Group III element and nitrogen are cause to react with each other in a nitrogen-containing atmosphere in the alkali metal melt, and the Group III nitride crystals are bound together by growth of the Group III nitride crystals grown from the seed crystals 1003a to produce a first crystal 1003.

IPC 8 full level
C30B 29/38 (2006.01); **C23C 16/08** (2006.01); **C23C 16/34** (2006.01); **C30B 19/02** (2006.01); **C30B 25/20** (2006.01); **H01L 21/205** (2006.01); **H01L 21/208** (2006.01)

CPC (source: EP US)
B28D 5/00 (2013.01 - US); **C30B 19/02** (2013.01 - EP US); **C30B 19/061** (2013.01 - US); **C30B 25/186** (2013.01 - EP US); **C30B 25/20** (2013.01 - EP US); **C30B 29/38** (2013.01 - US); **C30B 29/406** (2013.01 - EP US); **C30B 33/00** (2013.01 - US); **H01L 21/0242** (2013.01 - EP US); **H01L 21/0243** (2013.01 - EP US); **H01L 21/02458** (2013.01 - EP US); **H01L 21/02516** (2013.01 - EP US); **H01L 21/0254** (2013.01 - EP US); **H01L 21/02576** (2013.01 - EP US); **H01L 21/02579** (2013.01 - EP US); **H01L 21/02581** (2013.01 - EP US); **H01L 21/0262** (2013.01 - EP US); **H01L 21/02625** (2013.01 - EP US); **H01L 21/02642** (2013.01 - EP US); **H01L 21/02647** (2013.01 - EP US); **H01L 21/7813** (2013.01 - US); **H01L 29/2003** (2013.01 - US); **H01L 33/007** (2013.01 - US); **H01L 33/0093** (2020.05 - US); **H01L 33/12** (2013.01 - US); **H01L 33/32** (2013.01 - US); **H01S 5/3013** (2013.01 - US); **H01S 2304/06** (2013.01 - US)

Designated contracting state (EPC)
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

Designated extension state (EPC)
BA ME

DOCDB simple family (publication)
EP 3103899 A1 20161214; **EP 3103899 A4 20180103**; **EP 3103899 B1 20221102**; JP 2015166293 A 20150924; JP 6384851 B2 20180905; US 10266965 B2 20190423; US 2017073839 A1 20170316; WO 2015133379 A1 20150911

DOCDB simple family (application)
EP 15759207 A 20150226; JP 2014041080 A 20140303; JP 2015055716 W 20150226; US 201515123556 A 20150226